

# **PERCUSSION DEVICE OF A PAINTBALL GUN**

## **BACKGROUND OF THE INVENTION**

### **1. Field of the Invention**

The present invention relates to percussion device, and more  
5 particularly to a percussion device of a paintball gun.

### **2. Description of Related Art**

As usually, the paintball gun has two types, one is the Blow  
Back type and the other is the Air Ram type.

A conventional Blow Back type paintball gun in accordance  
10 with the prior art shown in Fig. 5 comprises body (60) having a first  
chamber (61) and a second chamber (62) respectively longitudinally  
defined in the body (60). The first chamber (61) and the second  
chamber (62) are parallel to each other. A passage (601) is defined in  
the body (60) and has two opposite ends respectively communicating  
15 with the upper chamber (61) and the second chamber (62). An inlet  
(602) is defined in the body (60) for allowing the compressed air  
flowing into the first chamber (61) and the second chamber (62) and  
sued as a power source of the paintball gun. A load passage (603) is  
defined in a top portion of the body (60) and adapted to communicate  
20 with a magazine of the paintball gun for guiding the paintball falling  
into a front end of the first chamber (61). A barrel (604) is  
longitudinally mounted to a front portion of the body (60) and  
co-axially corresponding to the first chamber (61). An action (63) is

reciprocally movably received in the first chamber (61).

A valve set (64) is secured in the second chamber (62) near the inlet (602) of the body and corresponding to the passage (601). A

piston (66) is reciprocally movably received in the second chamber (62)

5 and an insertion (65) is securely inserted into a rear end of the second chamber (62). A recoil spring (661) is compressively mounted between the piston (66) and the insertion (65) in the second chamber (62). The recoil spring (661) is previously compressed in the second chamber (62). A slot (605) is defined in a rear end of the body (60) and

10 communicates with the first chamber (61) and the second chamber (62).

A pin (67) extends through the slot (605) and has two opposite ends respectively secured in the action (63) and the piston (66) so that the action (63) and the piston (66) are moved simultaneously.

A grip (68) extends from the rear end of the body (60) and a  
15 trigger set (69) is mounted in the grip for selectively engaging to the piston (66). The piston (66) is moved with the action (63) to push the paintball toward the barrel (604) due to the restitution force of the recoil spring (661) when the trigger set (69) is actuated. The compressed air flows into the second chamber (62) to backward push  
20 the piston (66) and into the first chamber (61) to fire the paintball that is pushed into the barrel (604). The piston (66) is positioned again when being moved to the rear end of the second chamber (62) for next shooting.

However, the above structure of paintball gun needs a set of unique tool to detach the action (63), the insertion (65) and the piston (66) for cleaning the first chamber (61) and the barrel (604) when the paintball is a dud and is broken in the first chamber (61). In addition, the detaching processes are complicated and take a lot of time. It is an inconvenient design when playing a Survivor Parody outdoors.

For solving the above problem, a paintball gun with a quick-release percussion device is marketed. With reference to Fig. 6, the structure of a conventional Air Ram type paintball gun with a quick-release percussion device is similar to that of the conventional Blow Back type paintball gun, as shown in Fig. 5. The differences between the two conventional paintball guns are followed. A recoil spring (861) is longitudinally mounted between the valve set (84) and the piston (86) so that the piston (86) abuts the insertion (85) in an idle condition due to the restitution force of the recoil spring (861). The trigger set (89) includes a tube (891) communicating with an interior of the insertion (85) for controlling the compressed air flowing into the rear portion of the second chamber (82) to push the piston moved toward the valve set (84). The compressed air flows into the first chamber (81) and the second chamber (82) for firing the paintball in the barrel (804) when the valve set (84) is actuated by the piston (86). The piston (86) is moved to the original position due to the restitution of the recoil spring (861) when the trigger set (89) closes the tube

(891).

A groove (806) is defined in the body (80) and communicates with the first chamber (81). The groove (806) aligns with the slot between the first chamber (81) and the second chamber (82). A pin (9) sequentially extends through the groove (806), the action (83) and the slot (805), and inserted into the piston (86) so that the action (83) and the piston (86) are synchronously moved. A dimple (91) is laterally defined in pin (9). A hole (831) is longitudinally defined in the action (83) and extends to communicate with the dimple (91) in the pin (9). A steel ball (832) and a spring (833) are sequentially mounted in the hole (831). A locking member (834) is secured in the hole (831) to make the spring (833) push the steel ball (832) partially received in the dimple (91) to hold the pin (9) in place.

The user can hard pull the pin (9) from the piston (86) and the action (83) to make the action (83) apart from the piston (86). Consequently, the user can longitudinally pull action from the body (80) of the paintball gun for cleaning the first chamber (81) when the paintball is a dud and broken in the first chamber (81). After cleaning the first chamber (81), the action (83) is inserted into the first chamber (81), and the pin (9) extends through the action (83) and is inserted into the piston (86) to make the steel ball (832) partially received in the dimple (91) to hold the pin (9) in place. Then, the user can operate the paintball gun again.

However, the conventional Air Ram type paintball gun with a quick-release percussion device includes the following disadvantages.

1. The steel ball (832) does not provide a good positioning effect to the pin (9) because the steel ball (832) is not stable.

5 Consequently, the pin (9) may be detached from the piston (86) and the action (86). The action (86) will be shot from the first chamber (81) due to the compressed air in the first chamber (81). It is very dangerous.

2. For mounting the pin (9), to define the groove (806) is  
10 necessary. However, the manufacturing process of the groove (806) may damage the roundness of the first chamber (81) and the action (83) may not be smoothly moved in the first chamber (81).

3. The pin (9) is a small element so that the pin (9) may be lost after being detached from the action (83) when playing a violent  
15 Survivor Parody outdoors.

The present invention has arisen to mitigate and/or obviate the disadvantages of the two conventional percussion devices.

#### SUMMARY OF THE INVENTION

The main objective of the present invention is to provide an  
20 improved percussion device of a paintball gun in which the action of the paintball can be easily detached from the paintball gun.

To achieve the objective, the percussion device in accordance with the present invention comprises an action and a piston

respectively reciprocally movably received in a body of the paintball gun. The action and the piston are synchronously operated. The action includes a rear end extending out of the body of the paintball gun and an actuated rod reciprocally movably received in the action. A rear end  
5 of the actuated rod longitudinally backward extends through the action and forms an enlarged head for easily operating the actuated rod. A stick longitudinally extends from the actuated rod opposite to the enlarged head and a neck is formed on the stick for defining a receiving space. A snapper is movably mounted between the action and the  
10 piston for connecting the piston and the action. The piston and the action are engaged to each other and synchronously moved when the snapper abuts the stick. The action is in free condition and can be detached from the paintball gun when the actuated rod is inwardly pushed to make the snapper be received in the receiving space.

15 Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a side cross-sectional view of an Air Ram type  
20 paintball gun in which a percussion device in accordance with the present invention is mounted;

Fig. 2 is an operational view of the percussion device in Fig. 1 when being detached from the paintball gun;

Fig. 3 is an operational view of the percussion device in Fig. 1 when being detached from the paintball gun;

Fig. 4 is a side cross-sectional view of a Blow Back type paintball gun in which a percussion device in accordance with the present invention is mounted;

Fig. 5 is a side cross-sectional view of a conventional Blow Back type paintball gun in accordance with the prior art; and

Fig. 6 is a side cross-sectional view of a conventional Air Ram type paintball gun in accordance with the prior art.

#### 10 DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and initially to Fig. 1, a percussion device of a paintball gun in accordance with the present invention is mounted in an Air Ram type paintball gun (1) and comprises an action (2) and a piston (3) respectively reciprocally movably received in a first chamber (11) and a second chamber (12) that are longitudinally in a body of the paintball gun (1). The first chamber (11) and the second chamber (12) are parallel to each other. The action (2) has a rear end extending through paintball gun (1). A slot (13) is defined in the body of the paintball gun (1). The slot (13) is parallel to and communicates with the first chamber (11) and the second chamber (12). A pin (31) extends through the slot (13) and has two opposite ends respectively engaged to the action (2) and the piston (3) so that the action (2) and the piston (3) are synchronously moved with each other.

The action (2) includes a hole (22) longitudinally defined in the rear end (21) thereof and extending toward a front end of the action (2). The hole (22) has a threaded portion (23) formed on the distal end thereof. A spring (24) is longitudinally compressively received in the hole (22) and an actuated rod (25) is reciprocally movably received in the hole (22) and longitudinally abuts against the spring (24). A block (252) is screwed into the threaded portion (23) of the hole (22) to prevent the actuated from being detached from the action (2). The actuated rod (25) includes a body (250) and a stub (251) longitudinally extending from a rear end of the body through the block (252). An enlarged head (253) is formed on a free end of the stub (251) for easily longitudinally operating the actuated rod (25). The body (250) always abuts the block (252) due to the restitution force of the spring (24).

A stick (255) longitudinally extends from a front end of the body (250) opposite to the stub (251). A neck (254) is formed on the stick (255) near the body (250) for forming a receiving space (256) selectively corresponding to the pin (31). A through hole (26) is laterally defined in an outer periphery of the action (2) and communicates with the hole (22) in the action (2). The through hole (26) corresponds to the pin (31) that has a dimple (32) defined in a free end of the pin (31). A snapper (27) is partially received in the dimple (32), extends through the through hole (26) in the action (2) and abuts stick (255) for synchronously driving the action (2) with the piston (3).



In preferred embodiment of the present invention, the snapper (27) is a steel ball. The snapper (37) is fully received in the through hole (26) and the receiving space (256), and disengaged from the dimple (32) in the pin (31) when the actuated rod (25) is inwardly pushed.

- 5 Consequently, the action (2) can be longitudinally detached from the body of the paintball gun (1) alone.

With reference to Fig. 2, the user only needs to push the enlarged head (253) to make the receiving space correspond to the dimple (32) then the snapper (32) is fully received in the through hole  
10 (26) and the receiving space (256), and the action (2) is in a free condition. Consequently, the user can easily detach the action (2) from the body of the paintball gun (1) for cleaning the first chamber (11) when the paintball is a dud and broken in the first chamber (11).

As described above, the percussion device in accordance with  
15 present invention includes the following advantages.

1. The stick (255) is backward moved to downward push the snapper to be partially received in the dimple (32) in the top of the pin (31) and engaged in the through hole (26) so that the action (2) and the piston (3) is connected. In addition, the user only needs to inwardly  
20 push the actuated rod (25) to make the receiving space (256) correspond to the snapper (27) and the snapper (27) is fully received in the receiving space (256) and the through hole (26) in the action (2) for detaching the action (2) from the paintball gun (1) alone. The

percussion device of the present invention not only provides a good connection between the action (2) and the piston (3) but also provides an effect of easy detaching.

2. The groove of the conventional paintball gun with a  
5 quick-release percussion device is unnecessary to the present invention so that the roundness of the first chamber of the paintball gun with the present invention is ensured.

3. The actuated rod (25) is received in the action (2) so that the actuated rod (25) would not be lost when the action (2) is detached  
10 from the paintball gun (1).

With reference to Fig. 4 that shows the percussion device of the present invention mounted in a Blow Back type paintball gun, the structure of the Blow Back type paintball gun is described in the Description of Related Art. To compare Fig. 4 with Fig. 1, the action (2)  
15 can be used in the Blow Back type paintball gun as well as in the Air Ram type paintball gun, even though the structure of the piston (3A) of the Blow Back type paintball gun is different from that of the Air Ram type paintball gun.

Although the invention has been explained in relation to its  
20 preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.